

REMARKS

The Official Action dated February 5, 1997 has been carefully considered. Accordingly, the changes presented herewith, taken with the following remarks, are believed sufficient to place the present application in condition for allowance. Reconsideration is respectfully requested.

By the present Amendment, claims 157 and 170 are amended to include limitations from claim 178, and claim 178 has been cancelled from the application. Claims 157 and 170 have also been amended to exclude the embodiment wherein fluoroethers are the additive, which embodiment is now set forth in claims 183 and 184, respectively. Claims 158 and 171 have been amended to correspond with claims 157 and 170, respectively, and claims 168 and 176 have been amended to change their dependency to claims 183 and 184, respectively. Finally, claims 169 and 177 have been amended to more clearly define the invention, with no new limitations having been added. Since these changes do not involve any introduction of new matter and do not raise any new issues after final rejection, entry is believed to be in order and is respectfully requested.

In the Official Action, the Examiner indicated that claims 168 and 176 would be allowable if rewritten in independent form including all the limitations of the base claims and any intervening claims, and that these claims were deemed free of any prior art rejection over *The Defense Technical Information Center Technical Report* because the Report neither teaches nor suggests that fluoroethers are known fire extinguishing agents. In view of the Examiner's statement, Applicants submit that claims 183 and 184 directed to the embodiment wherein the additive is a fluoroether, and claims 168 and 176 dependent thereon, respectively, are prima facie allowable.

Claims 157, 158, 160-167, 169-175 and 177-179 were rejected under 35 U.S.C. §103(a) as being obvious over *The Defense Technical Information Center Technical Report* (*The Technical Report*). The Examiner stated that *The Technical Report* discloses the claimed

fluoroiodoalkane species of CF_3I , $\text{CF}_2\text{ICF}_2\text{I}$, and $\text{CF}_3\text{CF}_2\text{I}$ as effective fire-extinguishing agents and fire-suppression agents and the use of binary mixtures of halogenated carbons and halogenated hydrocarbons as fire-extinguishing agents. The Examiner noted that on page 39, *The Technical Report* refers to binary mixtures of halogen compounds as having a boiling point, and the Examiner concluded that the binary mixtures are therefore azeotropic or near azeotropic blends. The Examiner also concluded that the claimed invention "is at once envisaged" by one having ordinary skill in the art from the teachings and suggestions of the reference since the reference directly teaches the claimed species of fluoroiodocarbons, perfluorocarbons and hydrofluorocarbons as individually useful and suggests employing binary mixtures of halogenated carbons and halogenated hydrocarbons.

However, as will be set forth in detail below, it is submitted that the methods defined by present claims 157, 158, 160-167, 169-175, 177 and 179 are nonobvious over and patentably distinguishable from the teachings of *The Technical Report*. Accordingly, this rejection is traversed and reconsideration is respectfully requested.

Particularly, as defined by claims 157, 169, 170 and 177, the present invention is directed to methods of using a fire-extinguishing agent wherein a fire-extinguishing agent is provided in a discharge apparatus and discharged in a fire-extinguishing amount from the discharge apparatus into contact with a combustible or flammable material. According to claim 157, the fire-extinguishing agent consists essentially of an azeotropic or near azeotropic blend of a fluoroiodocarbon of the formula $\text{C}_a\text{H}_b\text{F}_c\text{I}_f\text{N}_g\text{O}_h$ wherein a is from 1 to 8, b is from 0 to 2, c and h are each from 0 to 1, e is from 1 to 17 and f is from 1 to 2, and at least one additive selected from the group consisting of hydrofluorocarbons and perfluorocarbons. The fire-extinguishing agent of claim 169 is a more specific embodiment of that of claim 157, wherein the fluoroiodocarbon is selected from a specified group of compounds. According to claim 170, the

fire-extinguishing agent comprises a blend of a fluoroiodocarbon of the aforementioned formula and at least one additive selected from the group consisting of hydrofluorocarbons and perfluorocarbons. Claim 177 is directed to more specific embodiments of claim 170, with the fluoroiodocarbon being selected from a specified group of compounds. In accordance with all of claims 157, 169, 170 and 177, the fluoroiodocarbon compound contains carbon, fluorine and iodine, and optionally hydrogen, nitrogen and/or oxygen. Fluoroiodocarbons containing bromine and/or chlorine are excluded from these claims.

As Applicants previously noted, *The Technical Report* describes a study, research and investigation for the development of a fire-extinguishing agent with fire-fighting characteristics equal to or superior to methyl bromide (page 1, Abstract). Numerous halogenated compounds were evaluated including, inter alia, several fluoroiodocarbon compounds. At pages 39-43, binary mixtures of ethyl bromide and methyl iodine, ethyl bromide and methylene chloride, and carbon tetrachloride and trichloroethylene are discussed. Table VI at page 43 discloses binary mixtures of CH_2Br_2 and each of CBr_3F , $\text{C}_6\text{F}_{11}\text{C}_2\text{F}_5$, $\text{CH}_3\text{CH}_2\text{Br}$, CCl_4 and CHCl_3 . At page 62, Table VII, *The Technical Report* discloses binary mixtures of CH_3Br and SF_6 , CH_3Br and C_4F_{10} , CH_3Br and $\text{C}_2\text{H}_5\text{Br}$, CH_3I and $\text{C}_2\text{H}_5\text{Br}$, CH_2Cl_2 and $\text{C}_2\text{H}_5\text{Br}$, CClF_3 and $\text{C}_2\text{H}_5\text{Br}$, and CCl_4 and $\text{CCl}_2=\text{CClH}$.

However, Applicants find no teaching or suggestion in *The Technical Report* relating to any binary mixtures containing fluoroiodocarbon compounds, particularly in combination with a hydrofluorocarbon or a perfluorocarbon as required by the present claims 157, 169, 170 and 177. On the other hand, *The Technical Report* specifically states in the paragraph bridging pages 2 and 3:

Several binary mixtures of halogen compounds were used as fire retarding agents on mixtures of n-pentane and air. This preliminary study indicated that in certain instances the use of a mixture of halogen-containing compounds is advantageous. The

actual effectiveness appeared to be characteristic of the particular mixture used. Hence, no generalizations can be made regarding choice of constituents in the mixture.

Additionally, with respect to the specific binary mixtures set forth in Table VII at page 62, some of the mixtures are disclosed as providing improved fire-extinguishing effects while some of the mixtures are disclosed as providing inferior fire-extinguishing properties. Thus, *The Technical Report* provides no overall motivation for successful combination of any of the single compounds disclosed therein. Specifically, *The Technical Report* provides no suggestion as to whether improved or inferior results would be provided by use of fire-extinguishing agents comprising the blends which are presently claimed.

In the Official Action, the Examiner acknowledges that while *The Technical Report* does state that "no generalizations can be made regarding the choice of the constituents in the mixture", the Examiner asserts that such is not deemed to teach or suggest away from the presently claimed invention. However, in order for the presently claimed methods to be patentable, it is not necessary that Applicants demonstrate that the prior art teaches away from the claimed invention. Rather, in order for the Examiner to establish nonpatentability of the present methods, the Examiner has the burden to show that the asserted modification of the prior art is suggested as desirable by the prior art. In view of *The Technical Report's* conclusion that no generalizations could be made regarding choice of constituents in binary mixtures, and the failure of *The Technical Report* to disclose any blends of fluoroiodocarbons, *The Technical Report* does not suggest any desirability for providing the specific blends employed in the present methods, namely fluoroiodocarbons and at least one hydrofluorocarbon or perfluorocarbon. Thus, the Examiner has not met the burden of establishing the prima facie case of obviousness based on *The Technical Report*.

In the Official Action, the Examiner states that there is no per se requirement in patent jurisprudence that the applied prior art has to teach and/or directly suggest that the combination of two or more components will result in an improvement as compared to the use of the components separately, and rather, it is required that the applied prior art motivate one having ordinary skill in the art to make the combination. Applicants submit that the correct standard is that the prior art must suggest the desirability of any modification of the prior art asserted by the Examiner in rejecting the present claims, *In re Laskowski*, 10 USPQ 2d 1397 (Fed. Cir. 1989); *In re Fritch*, 23 USPQ 2d 1780 (Fed. Cir. 1992). Because *The Technical Report* fails to disclose any blends containing fluoroiodocarbons and because *The Technical Report* indicates that no generalizations can be made as to suitable constituents for a binary mixture, Applicants submit that *The Technical Report* does not suggest the desirability of the presently claimed blend compositions containing specifically defined fluoroiodocarbon compounds and specifically defined additives. Thus *The Technical Report* does not render obvious the presently claimed methods employing such blends.

In this regard, it is important to note that all of the binary mixtures which Applicants find disclosed in *The Technical Report* include at least one chlorinated or brominated compound, which compounds are traditionally known as effective fire-extinguishing and fire-suppressing agents. On the other hand, the blend compositions employed in the methods of the present invention are directed to combinations of fluoroiodocarbon compounds which do not contain either bromine or chlorine and at least one additive selected from hydrofluorocarbons and perfluorocarbons, which also do not contain either bromine or chlorine. Thus, the blends employed in the presently claimed methods are further distinguishable from the teachings of *The Technical Report*.

It is impermissible within the framework of Section 103 to pick and choose from any one reference only so much of it as will support a given position to the exclusion of other parts necessary to the full appreciation of what such reference fairly suggests to one of ordinary skill in the art, *In re Wesslau*, 147 USPQ 391 (CCPA 1965). Thus, it is impermissible to rely on the specific binary mixtures taught in *The Technical Report* in order to conclude that *The Technical Report* renders obvious the presently claimed methods or any methods employing blends, while ignoring the conclusion of *The Technical Report* itself that no generalizations can be made with respect to the choice of constituents in or effectiveness of a fire-fighting mixture. Rather, when *The Technical Report* is viewed in its entirety, it is clear that *The Technical Report* does not teach or suggest to one of ordinary skill in the art the specific blends employed in the present claims or any desirability with respect to use of the blend compositions as recited in the present claims for firefighting purposes.

When a selective combination of prior art teachings is necessary to render obvious a subsequent invention, there must be some reason for the combination other than the hindsight gleaned from the invention itself; not only must the claimed invention be evaluated as a whole, but so also must the references so that their teachings are applied in the context of the significance to a technician at the time of the invention, *Interconnect Planning Corp. v. Feil*, 222 USPQ 543 (Fed. Cir. 1985). As noted above, *The Technical Report* provides no guidance for the combination of the fluoroiodocarbon compound and at least one hydrofluorocarbon or perfluorocarbon. Rather, *The Technical Report* discloses only a few specific binary mixtures, all of which contain at least one brominated or chlorinated compound and concludes that no generalization concerning the effectiveness of binary mixtures can be made from the limited investigations conducted by the authors. Such teachings do not render the presently claimed methods obvious.

The Examiner has relied on *In re Kerkhoven*, 205 USPQ 1069 (CCPA 1980) for the proposition that it is not patentable to employ two or more materials in combination for the same purpose for which they are taught to be individually useful. However, as noted previously, the Examiner's reliance on *In re Kerkhoven* is inappropriate in the present application where the prior art teaches that the effectiveness of binary mixtures is unpredictable in view of the respective properties of the individual materials. Where the prior art specifically teaches that some mixtures exhibit improvement while other mixtures exhibit inferior performance, as the results in Table VII at pages 62-63 of *The Technical Report* indicate, *In re Kerkhoven* is not applicable.

Finally, the Examiner stated that Applicants have not shown superior or expected results for their particular fire-extinguishing admixtures over those directly taught by *The Technical Report*. However, a showing of unexpected results is not necessary where the Examiner has not established a prima facie case of nonobviousness. As noted above, in the absence of any suggestion in the prior art relating to the blends recited in the claims or relating to a desirability of the presently claimed blends for use in fire-fighting, the Examiner has not established a prima facie case of obviousness with respect to the presently claimed methods employing such blends for fire extinguishing or fire suppressing purposes.

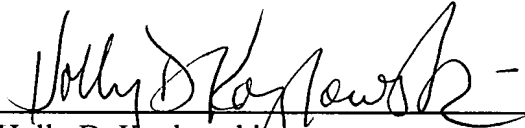
At most, in view of the teachings set forth in the 332 pages of *The Technical Report*, one skilled in the art might find it obvious to try various combinations of the numerous compounds disclosed therein. However, "obvious to try" is not the standard for negating patentability under 35 U.S.C. §103, *In re Geiger*, 2 USPQ 2d 1276 (Fed. Cir. 1987); *In re O'Farrell*, 7 USPQ 2d 1673 (Fed. Cir. 1988). Particularly, *The Technical Report* provides no suggestion that blends of a fluoriodocarbon compound as presently claimed, particularly with at least one additive selected from the group consisting of hydrofluorocarbons and perfluorocarbons as presently

claimed, are suitable for use as fire extinguishing agents in fire extinguishing or fire suppression methods as now claimed.

It is therefore submitted that the methods defined by claims 157, 158, 160-167, 169-175, 177 and 179 are nonobvious over and patentably distinguishable from *The Technical Report*, whereby the rejection under 35 U.S.C. §103 has been overcome. Reconsideration is respectfully requested.

It is believed that the above represents a complete response to the Examiner's rejection under 35 U.S.C. §103, and places the present application in condition for allowance. Reconsideration and an early allowance are requested. In the event that the present application is still not in condition for allowance, entry of the present Amendment is requested for purposes of appeal.

Respectfully requested,



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